

REMARKS

Claims 1-6, 8-9, 11, 13, 14, 17-24, 27, 28, 31, 33, 34, 36-49, and 63-98 were pending in the present application. Applicants have amended claims 1, 4, 11, 67, 69, 70, 75, 77, and 78. Reexamination and reconsideration of all of the claims, as amended, are respectfully requested.

Applicants appreciate the indication of allowability of former claim 78 based on the Mangin mirror arrangement “comprising a third element [having] one surface in contact with the immersion liquid.” Office Action, p. 8. Applicants have included this third element aspect of the Mangin mirror arrangement in independent claims 1, 67, and 75. Certain dependent claims have been amended to correspond to the revisions in the base claims and not for reasons related to patentability.

Double Patenting

The Office Action provisionally rejected claims 1, 5-6, 8, 17-18, 67, and 71-73 based on claims 43 and 45-48 of co-pending application 10/646,073. The Office Action further provisionally rejected claims 1, 3, 8, 9, 17-19, 67, 69, and 73-74 based on claims 1-2, 4, 7-9 and 11 of co-pending application 10/434,374 in view of U.S. Patent 4,108,794 to Yonekubo (“Yonekubo”) or U.S. Patent 5,825,043 to Suwa (“Suwa”).

Applicants contend that the inventions defined in the present claims, as amended, include the three element Mangin mirror arrangement and are therefore not unpatentable based on claims 43 and 45-48 of co-pending application 10/646,073, nor claims 1-2, 4, 7-9, and 11 of co-pending application 10/434,374 in view of Yonekubo or Suwa.

Applicants note that claim 43 of the ‘073 application as currently written recites:

43. An objective for use with light energy having a wavelength in the range of approximately 157 nanometers through the infrared light range, comprising:

at least one focusing lens having diameter less than approximately 100 millimeters receiving said light energy and transmitting focused light energy;

at least one field lens having diameter less than approximately 100 millimeters, receiving said focused light energy and transmitting intermediate light energy; and

at least one Mangin mirror element having diameter less than 100 millimeters receiving said intermediate light energy through a back side thereof and providing controlled light energy from a front side thereof through an immersion substance to a specimen;

wherein each focusing lens and each field lens is formed from a single glass material.

Claims 45-48 of the '073 application are dependent and add neither an immersion substance nor the third element in a mangin mirror arrangement as currently claimed in amended claims 1, 67, and 75 of the current application. Further, none of the cited claims of the '374 application recite this third element of the Mangin mirror arrangement nor the immersion substance currently claimed in the amended independent claims.

Applicant notes that page 2 of the current specification and all paperwork accompanying the present application claims that the present application is a continuation in part of the '073 and '374 applications, not continuations thereof. New matter added includes, inter alia, the unique Mangin mirror arrangements and the immersion substance. The current invention is not merely an obvious extension of these designs, but represents a new and distinct invention having the limitations claimed. MPEP 804 requires a determination of "whether the invention defined in a claim in the application would have been an obvious variation of the invention defined in a claim in the patent [or cited pending application]. ... Unless a claimed invention in the application would have been obvious over a claimed invention in the patent [or cited pending application], no double patenting rejection of the obvious-type should be made..."

Applicants submit that the claims, as amended, now include limitations neither disclosed nor suggested by the references cited, that the claimed invention would not have been obvious based on the cited references, and that therefore no double patenting exists in the present situation.

35 U.S.C. §103

Shafer 722

The Office Action rejected claims 1, 2, 5, 6, 8, 9, 11, 13, 14, 17-19, 64, 67, 68, 71-73 and 74 under 35 U.S.C. §103 based on U.S. Patent Application 2001/0040722 to Shafer et al. (“Shafer 722”) in view of Yonekubo or Suwa.

Applicants present two arguments in response to this rejection. First, inclusion of the third element in the Mangin mirror arrangement as claimed in all independent claims, as amended, is not disclosed nor suggested in any cited reference. Second, the combination of Shafer 722 with the Yonekubo and Suwa references is improper.

Shafer 722 is a broad band DUV/VUV imaging system that does not employ an immersion liquid, does not discuss an immersion liquid, and does not illustrate an embodiment having a mangin mirror arrangement with three elements wherein light energy enters through a back or rear side and is provided to a specimen, but rather uses a mangin mirror arrangement to provide substantially what may be termed a retro beam reflecting light energy back from the light energy received (see, e.g., FIG. 3). As noted, a critical issue is the complete absence of an immersion liquid and the third Mangin mirror arrangement element from the reference.

Neither Yonekubo nor Suwa disclose nor suggest the unique properties associated with the present design, including but not limited to a Mangin mirror arrangement positioned to receive the intermediate light energy from the plurality of field lenses through a back side of the Mangin mirror arrangement and form controlled light energy transmitted from a front side of the Mangin mirror arrangement, said Mangin mirror arrangement comprising at least three axially distributed elements each having reflective surfaces, and an immersion liquid between the Mangin mirror arrangement and the specimen, wherein the third element of the Mangin mirror arrangement is in contact with the immersion liquid. Yonekubo and Suwa show immersion liquids used in microscopes, but do not indicate use with a three element Mangin mirror arrangement, use of focusing lenses and field lenses as claimed, or disclose or suggest at least one Mangin mirror arrangement receiving light energy through a back side thereof. The absence

from these references of the three element Mangin mirror arrangement renders the claims patentable.

Regarding the immersion substance/liquid, it is as if an immersion liquid was found in these references and assumed to be insertable wholesale into the Shafer device. Alternately, it is as if the fact that objectives existed and immersion liquids existed is sufficient to reject any claims directed to a specific, inventive objective design that employs an immersion liquid. In reality, one could not simply place an immersion liquid within the Shafer 722 design and obtain an objective design having the beneficial aspects presently claimed or operating with any level of adequate performance. In other words, the resultant device would be a poor image and inadequate inspection in the environment claimed. Thus it is difficult, if not impossible, to argue that one would be motivated to combine the design of Shafer 722 with the immersion liquids of Yonekubo or Suwa based on the disclosure of the references themselves and have any ability to image a specimen without resorting to undue experimentation.

In sum, Shafer 722 neither discloses nor suggests use of an immersion liquid whatsoever. This motivation is provided solely by the Office Action, having viewed Applicants' claims and reconstructing the claimed invention using the claims as a guide, essentially plugging in an immersion liquid into Shafer 722, if such a combination could result in anything useful.

There is simply no suggestion in Shafer 722 to employ an immersion liquid or substance or a mangin mirror arrangement where light energy passes through a back side thereof, and no motivation in Yonekubo or Suwa to use an immersion liquid or substance in a complex lensing design comprising, for example, field lenses, focusing lenses, and a mangin mirror arrangement as currently claimed. Simply put, these references are materially diverse and each reference does not suggest employing the features disclosed in any of the other references in any manner whatsoever.

The standard for making an obviousness rejection is set forth in MPEP 706.02(j):

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one

of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. [citations omitted]

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

The Office Action fails to meet this burden. Although the Office Action tries to describe how one skilled in the art would have been motivated to modify Shafer 722 to incorporate the teachings of Yonekubo and Suwa, these attempts fall short.

The Office Action states the motivation to combine the Shafer 722 reference with the immersion references (Yonekubo and Suwa) is that immersion liquids provide "better imaging performance," and suggesting the motivation to combine is "to use a immersion liquid like those taught in Yonekubo or Suwa with the objective of Shafer 722 to provide better imaging performance." Office Action, page 7. This is not a motivation to combine, but a conclusory, beneficial **result** gleaned from the teachings of Applicants and specifically Applicants' claims in an effort to deprecate Applicants' invention.

It is disingenuous and overly simplistic to say that an alternative design, wherein an immersion liquid is completely missing, but that includes an immersion liquid, would be desirable. Alternatives are always desirable. However, Shafer 722 specifically contemplates an objective design for use in the DUV/VUV realm *without any need, suggestion, or motivation to employ such an immersion liquid*. The immersion liquid, as shown by Appellants' disclosure, enables users to successfully inspect specimens where light energy passes through a back side of an element such as a three element Mangin mirror arrangement, features not taught by Shafer

722. Shafer 722 does not contemplate the use of immersion liquids, even though immersion liquids were known and available.

Applicants also note that broad conclusory statements regarding the teaching of multiple references, standing alone, are not “evidence” of a motivation to combine the references. *In re Zurko*, 59 USPQ2d 1693 (Fed. Cir. 2001); *McElmurry v. Arkansas Power & Light Co.*, 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993) (“Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact.”)

As noted, the PTO has the burden of establishing a prima facie case of obviousness under 35 U.S.C. § 103. The PTO must show that some objective teaching in the prior art or knowledge generally held by one of ordinary skill would lead an individual to combine the relevant teachings of the references. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). Therefore, a combination of relevant teachings alone is insufficient grounds to establish obviousness, absent some teaching or suggestion to do so. *Id.* at 1075. In this case, the Office Action does not point to any teaching or suggestion in the cited references that would lead an artisan to come up with the claimed invention.

The Federal Circuit has held that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. *ACS Hospital System, Inc. v. Montefiore Hospital*, 732 F.2d 1572 (Fed. Cir. 1984). Without some showing in the prior art that suggests in some way a combination in order to arrive at the claimed invention, it is impermissible to use the Applicants’ teaching to search references for the claimed elements and combine them as claimed. *In Re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991); *In Re Laskowski*, 871 F.2d 115, 117 (Fed. Cir. 1989); *see also, Ex Parte Lange*, 72 U.S.P.Q. 90, 91 (C.C.P.A. 1947) (“It seems to us that the Examiner is using appellant’s disclosure for the suggestion of the combination since there is no suggestion in any of the patents for their combination in the manner claimed by Applicant.”); *In re Leonor*, 158 U.S.P.Q. 20, 21 (C.C.P.A. 1968) (the issue is “whether teachings of prior art would, of themselves, and without benefit of applicant’s disclosure, suggest [a process] which would make claimed invention obvious...” (emphasis in original)). As noted, the Shafer 722 reference does not suggest using

immersion liquids, such as the immersion liquids of Yonekubo or Suwa, to produce the unique designs claimed in Applicants' independent claims 1, 67, and 75, as amended.

Applicants submit that the Office Action uses hindsight in rejecting the claims herein. It is only through hindsight, after seeing Applicants' disclosure, that it would be considered possible to create the objectives and methods claimed by the Applicants. With regard to the use of hindsight, or the use of an Applicant's teaching to combine references, the courts have overwhelmingly condemned such combinations and have upheld the validity of patents or claims of patents in which such hindsight was employed to combine the references. *W.L. Gore Associates, Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983), (condemning the "insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher"); *In re Fine*, 837 F.2d at 1051 ("One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.") Appellants respectfully submit that combination of aspects of the Shafer 722 reference with the Yonekubo or Suwa references is merely a hindsight reconstruction of the invention using Applicants' disclosure and attempting to use Applicants' claims as a guide. Such hindsight reconstruction of the claimed system is inappropriate and thus rejection of the independent claims for this reason is improper.

The argument is sometimes made, citing *In re Sernaker*, 702 F.2d 989 (Fed. Cir. 1983) and *In re Nilssen*, 851 F.2d 1401 (Fed. Cir. 1988), that no express suggestion in the references for the combination of references is necessary. However, the issue is whether the references as a whole suggest the particular combination being used to reject the claims on obviousness grounds. When the Examiner must resort to selecting elements of various teachings in order to form the claimed invention, he or she must establish first that there is a suggestion or motivation in the prior art to make the particular selection made by applicant. *In re Gorman*, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). The Examiner has not established any legitimate suggestion or motivation to make the cited combination – she has only asserted that it would be desirable to employ some type of "immersion liquid" in an objective design because it might provide better imaging performance.

Applicants therefore submit that there is no motivation to combine the teachings of Shafer 722 with Yonekubo or Suwa present in the references themselves, and it is only through the use

of impermissible hindsight that one could construct the invention as claimed. Thus claims 1, 67, and 75 are not obvious in view of the cited references.

Applicants respectfully submit that combining the immersion liquid of Yonekubo or Suwa with the Shafer 722 design is merely a hindsight reconstruction of the invention using Applicants' disclosure and claims as a guide. Such hindsight reconstruction of the claimed system is inappropriate and thus rejection of independent claims 1 and 67 in this manner is improper.

Shafer '518

The Office Action further rejected claims 1-3, 13, 14, 64, and 67-69 under 35 U.S.C. §103 based on U.S. Patent 5,717,518 ("Shafer 518") in view of Yonekubo or Suwa. Applicants note that the Office Action also rejected claims 4 and 70 based on Shafer 518 in view of Yonekubo or Suwa and further in view of Hamblen, U.S. Patent 5,159,495 ("Hamblen").

Shafer '518 is a broad spectrum ultraviolet catadioptric imaging system that again does not include the three element Mangin mirror arrangement nor use an immersion substance, nor suggest the inclusion of either.

Also, the two field lenses in Shafer '518 are generally positioned within the lens 39, which differs from the embodiment of FIG. 7 wherein the field lenses 710 and 711 are separate from and behind the mangin mirror arrangement 712. Thus referring to amended claim 1, the limitations: "a plurality of field lenses oriented to *receive focused light energy from said focusing lens group and provide intermediate light energy;*" and "a Mangin mirror arrangement *positioned to receive the intermediate light energy from the plurality of field lenses through a back side of the Mangin mirror arrangement* and form controlled light energy transmitted from a front side of the Mangin mirror arrangement" are not met. If the field lens arrangement of Shafer '518 is considered to "produce intermediate light energy," then the lens 39 of Shafer '518 is not "positioned to receive the intermediate light energy from the plurality of field lenses through a back side of the Mangin mirror arrangement." The back side of the lens 39, such as that shown with respect to concave reflective surface coating 41 does not receive "intermediate light

energy,” i.e. energy transmitted from the field lenses illustrated. Thus the arrangement claimed differs from the ‘518 design. Again, neither Yonekubo nor Suwa show such a design. Thus claims 1 is not anticipated by the references cited, as it includes limitations (plurality of field lens limitations and Mangin mirror arrangement limitations) not shown in any of the references, either alone or in combination.

Additionally, similar to the arguments recited above, there is no motivation to combine the references in the manner suggested. Like Shafer 722, Shafer ‘518 is completely silent on use of an immersion liquid and a three element Mangin mirror arrangement. Neither Yonekubo nor Suwa disclose nor suggest the unique properties associated with the present design. Yonekubo and Suwa show immersion liquids used in microscopes, but do not include a three element Mangin mirror arrangement, use focusing lenses and field lenses as claimed, or disclose or suggest at least one Mangin mirror arrangement receiving light energy through a back side thereof. Again, it is as if an immersion liquid was found in these references and assumed to be insertable wholesale into the Shafer ‘518 device. In reality, one could not simply place an immersion liquid within the Shafer ‘518 design and obtain an objective design having the beneficial aspects presently claimed or operating with any level of adequate performance. In other words, the resultant device would be a poor image and inadequate inspection in the environment claimed. Thus it is difficult, if not impossible, to argue that one would be motivated to combine the design of Shafer ‘518 with the immersion liquids of Yonekubo or Suwa based on the disclosure of the references themselves.

There is simply no suggestion in Shafer ‘518 to employ an immersion liquid or substance or a mangin mirror arrangement where light energy passes through a back side thereof, and no motivation in Yonekubo or Suwa to use an immersion liquid or substance in a complex lensing design comprising, for example, field lenses, focusing lenses, and a Mangin mirror arrangement as currently claimed. Simply put, these references are materially diverse and each reference does not suggest employing the features disclosed in the other references in any manner whatsoever.

The Office Action states the motivation to combine the Shafer ‘518 reference with the immersion references (Yonekubo and Suwa) is that immersion liquids provide “better imaging performance,” and suggesting the motivation to combine is “to use a immersion liquid like those

taught in Yonekubo or Suwa with the objective of Shafer '518 to provide better imaging performance.” Office Action, page 7. This is not a motivation to combine, but a conclusory, beneficial **result** gleaned from the teachings of Applicants and specifically Applicants’ claims in an effort to deprecate Applicants’ invention. Broad conclusory statements regarding the teaching of multiple references, standing alone, are not “evidence” of a motivation to combine the references. *In re Zurko*, 59 USPQ2d 1693 (Fed. Cir. 2001); *McElmurry v. Arkansas Power & Light Co.*, 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993) (“Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact.”)

The Office Action does not point to any teaching or suggestion in the cited references that would lead an artisan to come up with the claimed invention. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. As noted, the Shafer '518 reference does not suggest using immersion liquids, such as the immersion liquids of Yonekubo or Suwa, to produce the unique designs claimed in Applicants’ independent claims 1, 67, and 75, as amended.

Applicants submit that the Office Action uses hindsight in rejecting the claims herein. It is only through hindsight, after seeing Applicants’ disclosure, that it would be considered possible to create the objectives and methods claimed by the Applicants. Such hindsight reconstruction of the claimed system is inappropriate and thus rejection of independent claims 1, 67, and 75 in this manner is improper.

Hamblen

As noted, the Office Action rejected claims 4 and 70 based in part on Hamblen in combination with Shafer 518. This represents yet another reference, having limited applicability, pulled essentially out of thin air in an effort to further deprecate Applicants’ invention. Hamblen does not discuss nor suggest use of an immersion substance. Hamblen does not operate remotely similar to Shafer 518 nor the current design. With respect to the wording of claim 1, Hamblen does not have “a focusing lens group comprising at least one focusing lens configured to receive said light energy and form focused light energy.” Hamblen does not include “a plurality of field

lenses oriented to receive focused light energy from said focusing lens group and provide intermediate light energy.” Having no plurality of field lenses, Hamblen cannot be said to have “a Mangin mirror arrangement positioned to receive the intermediate light energy from the plurality of field lenses through a back side of the Mangin mirror arrangement and form controlled light energy transmitted from a front side of the Mangin mirror arrangement...” As noted, Hamblen does not include “an immersion liquid between the Mangin mirror arrangement and the specimen, wherein the third element of the Mangin mirror arrangement is in contact with the immersion liquid.” As a result, Hamblen materially differs from the other cited references and at most can be said to include a lens (optional field refocusing lens 40) and a single Mangin mirror arrangement reflective element. Regarding the Mangin mirror arrangement shown in Hamblen, Applicants note that in FIG. 3 of Hamblen, while optical element 10 includes layer 18 of a reflective material such as silver, in contrast element 32 is called a “lens” and only has a limited “reflective coating 38” affixed to the back of the lens 32. This materially differs from, for example, the “second surface reflection” included in certain claims. Lens 32 does not conform to the Mangin mirror arrangements claimed.

Further, there is no motivation in Hamblen to combine the reference with the immersion liquids of Yonekubo or Suwa, nor any motivation to combine Hamblen with Shafer 518. Combination of Hamblen’s FIG. 3 design with Shafer 518 would result in some type of system that simply could not image anything without undue experimentation. Further, no motivation is articulated in Shafer 518, Yonekubo, or Suwa to use the refocusing lens 40 of Hamblen in the manner suggested.

Applicants submit that the Office Action uses hindsight in rejecting former claims 4 and 70 based on Hamblen and the other three references. It is only through hindsight, after seeing Applicants’ disclosure, that it would be considered possible to create the objectives and methods claimed by the Applicants. Such hindsight reconstruction of the claimed system is inappropriate and thus rejection of former claims 4 and 70 is improper.

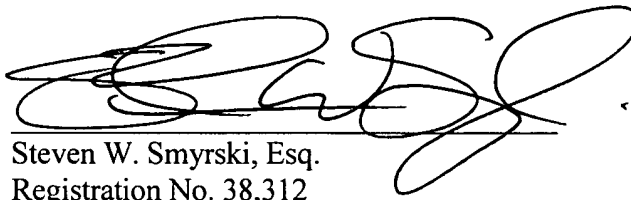
For the foregoing reasons, Applicants thus respectfully submit that claims 1, 67, and 75 are allowable over the references of record, and that all claims dependent from these allowable independent claims are allowable as they depend from an allowable base claim.

CONCLUSION

In view of the foregoing, it is respectfully submitted that all claims of the present application are in condition for allowance. Reexamination and reconsideration of all of the claims, as amended, are respectfully requested and allowance of all the claims at an early date is solicited.

Applicants believe that no fees are due in accordance with this Response beyond those included herewith. Should any fees be due, the Commissioner is hereby authorized to charge any deficiencies or credit any overpayment to Deposit Account 502026.

Respectfully submitted,


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